

## **REMARKS**

As a preliminary matter, a Supplemental Information Disclosure Statement is filed herewith, along with the appropriate fee. Consideration of the information in the Disclosure Statement is requested.

Claims 1-4 stand rejected under 35 U.S.C. 102(b) as being anticipated by Yoshimura. The rejection is respectfully traversed.

As a first point, Yoshimura does not qualify as prior art under 35 U.S.C. § 102(b). Yoshimura was published on March 7, 2002, and the patent issued on January 7, 2004. Neither of those dates are more than one year prior to the July 18, 2002 or July 31, 2002 priority dates of the present application. Accordingly, Yoshimura does not qualify as prior art under 35 U.S.C. § 102(b).

The filing date of Yoshimura is prior to the priority dates of the present application. In the event that the examiner would conclude that Yoshimura qualifies as prior art under another section of 35 U.S.C. 102, the rejection is traversed on substantive grounds as well.

The rejection states that Yoshimura discloses “holographically patterning the photoresist layer to form a pattern mask” and cites column 38, line 60 of Yoshimura. There is no such disclosure in Yoshimura. In fact, Yoshimura suggests just the opposite. Namely, Yoshimura suggests that it was never contemplated to holographically pattern a photoresist layer and then transfer the pattern using dry etching as is claimed.

The portion of column 38 cited by the examiner does discuss the holographic patterning. However, Yoshimura states that such patterning is only possible when “waveguide 124b is formed from a photosensitive core material”. It is in that case that Yoshimura believes that “portions of it corresponding to grating portions 155 may be removed by a photoexposure using an interference pattern such as that generated by holographic means.” In other portions of Yoshimura, the use of photoresist is discussed. Yoshimura never discusses patterning photoresist via holographic patterning and following the patterning by a dry etching process. When discussing patterning of

photoresist, Yoshimura discusses the use of standard metal masks and multiple lithographic patterning steps as discussed in column 40, lines 52-67. Accordingly, the 102 rejection based upon Yoshimura in claim 1 is incorrect.

The rejection with respect to claim 4 is separately traversed. The examiner cites column 38, line 60 and columns 62, lines 21-22. There is nowhere discussed in those columns direct writing of optical defects into a patterned photoresist mask. As discussed above, Yoshimura uses metal shadow masks 820-1 and 820-2 and multiple lithographic steps. There is no discussion of a holographic formation of a mask in photoresist, and there is certainly no discussion in the portions cited by the examiner of direct writing of photodefects into such a mask. If applicants have missed the particular language that the examiner relies upon for the writing of defects into a photoresist mask, the examiner's assistance in identifying the exact disclosure in Yoshimura is requested.

Claims 5-21 stand rejected under § 103 over Yoshimura and Kumar. The rejection is respectfully traversed.

The particular methods for forming and testing holographs in Kumar do nothing to suggest that the position of the photoresist layer is changed and a second volumetric interfering of at least two beams is conducted. There is a general discussion of holographic patterning of polymers in Kumar, but it is not concerned with photoresist layers and there is no particular discussion found by applicants of the position change. Portions cited by the examiner discuss testing the efficiency of the holographic grating with a probe beam generator. There is no support for the stated motivation of the examiner, and no support that the features of claim 5 are suggested. The examiner cites column 11, lines 20-25 to note that the position at which the incident beam is reflected can be changed. This portion of Kumar does not suggest conducting a second patterning, however.

Regarding independent claim 20 directed towards a spectral filter, the rejection is separately traversed. Regarding claim 20, the examiner points to item 38 in Fig. 9 as corresponding to the claim nanocavity. There is no item 38 in Fig. 9. If the

examiner intended to point to item 638, this is a vertical cavity surface emitting laser. Applicant finds no nanocavities in a multilayer structure of a filter as claimed. The examiner also claims that the periodic defects with alternating periods are well known. That does not correspond to the claim language, and the contention is disputed by applicants. In claim 20, the periodic defects are in the multilayer structure and periodically interrupt the alternating refractive indices. Applicants find no support for the contention that this feature is disclosed in Yoshimura, and the particular periodic defects combined with nanocavities and the multilayer structure having alternating refractive indices is not well known. If this rejection is maintained, it is requested that the examiner cites support to demonstrate that the feature is well known in the art.

Regarding claim 21, applicants again note that Yoshimura does not disclose volumetric interference of two beams to create an interference pattern in photoresist. The portions of Yoshimura cited by the examiner discuss only the direct patterning of "photosensitive core material". Yoshimura assumes typical multiple lithographic steps for patterning using metal masks when patterning photoresist material. The examiner also asserts that the defect introduction in such a lattice pattern by optical direct lighting is well known in the art. Applicants know of no such well known practice, and invite the examiner to demonstrate that the writing of defects into a holographically patterned photoresist layer is well known in the art by citing art to support such a contention.

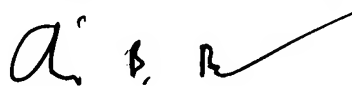
For all the above reasons, applicants respectively request reconsideration and allowance of the application. Should the examiner believe that a telephone conference would aid in the prosecution of the application, the examiner is invited to contact the undersigned attorney at the below-listed number.

Respectfully submitted,

GREER, BURNS & CRAIN, LTD.

August 7, 2007  
300 South Wacker Drive, Suite 2500  
Chicago, Illinois 60606  
(312) 360-0080  
Customer No. 24978

By:

  
Arik B. Ranson  
Registration No. 43,874